

DEPARTMENT OF PUBLIC HEALTH AND HUMAN SERVICES

Communicable Disease Control

Cryptosporidiosis

What is cryptosporidiosis?

Cryptosporidiosis is a parasitic infection of medical and veterinary importance which causes diarrheal disease in humans and animals worldwide.

What causes cryptosporidiosis?

A single-celled, protozoan parasite called *crypto sporidium parium*.

Is this a new pathogen?

No. While the organism was first recognized in 1907, most information on this disease has been obtained only within the past few years. The first reported human cases were recognized in 1976, and were associated with exposure to farm animals. In the early 1980's most reported infections were in patients with AIDS. The role of *crypto sporidium* in human disease has gradually emerged due to increased awareness of the organism and improved laboratory technology.

Where is the organism found?

The organism grows and reproduces within epithelial cells of the respiratory and digestive organs of vertebrates. Once thought to be rare and host specific, *crypto sporidium* is now known to be ubiquitous and to have many hosts, including humans, cattle and other domestic animals.

What are the symptoms of cryptosporidiosis and how soon do they appear?

The most common symptom is diarrhea which is usually watery and profuse, and often accompanied by abdominal cramping. Nausea, vomiting, fever, headache and loss of appetite may also occur. Some persons infected with *crypto sporidium* may not become ill. Symptoms develop one to twelve (1-12) days after exposure, with an average of seven (7) days.

Who is susceptible to cryptosporidiosis and how long does the illness last?

All persons are presumed susceptible to infection with *crypto sporidium*. In most healthy person, the disease is self limited, and generally persists for two weeks or less, although subjects may improve and then worsen during that time period. Immunocompromised individuals, however, may be unable to clear the parasite and may have much more severe and long lasting illness. (Some examples of immunocompromised persons include people undergoing cancer therapy, kidney dialysis patients, persons on steroids, people infected with HIV, and Crohn's disease patients.).

How is the disease acquired?

Crypto sporidium is shed in the feces of infected humans, domestic animals, and wild animals. Infection occurs when the organism is subsequently ingested by a person. Thus, cryptosporidiosis can be acquired by person-to-person or animal to person transmission and by drinking contaminated water. Infected individuals can shed the organism in stool for several weeks after they recover from the illness. Because cryptosporidiosis is transmitted by the fecal-oral route, persons with the greatest potential to transmit the organism include infected persons who have diarrhea, persons who are incontinent of stool, persons with poor personal hygiene, and diapered children.

How is cryptosporidiosis diagnosed?

Diagnosis is made by identification of the parasite in either fecal smears or intestinal biopsy sections. The organism may be confused with yeasts unless appropriately stained. Infection by this agent is not easily detected unless looked for specifically. For more information on the laboratory identification of cryptosporidiosis, contact the Montana Public Health Laboratory at 444-2642.

Can cryptosporidiosis be treated?

There is not a specific treatment for cryptosporidiosis. Fluid therapy is indicated if dehydration is a problem. Anti-diarrheal drugs which reduce the motility of the intestines may provide some temporary improvement. If the individual is taking immunosuppressive drugs, these should be stopped if possible.

How can one avoid getting and transmitting cryptosporidiosis?

To minimize one's risk of acquiring and spreading the infection, thoroughly wash hands after using the toilet or changing diapers and before handling food. Dispose of feces in a sanitary manner. Use care when handling animal excreta. Because cattle are a common source of *Crypto sporidium*, avoid drinking unpasteurized milk, and wash hands thoroughly after contact with cattle, particularly those with diarrhea (scours). Avoid drinking, untreated and inadequately filtered surface water when camping or traveling and comply with water advisories issued by local and state authorities.

Are there special concerns about *Crypto sporidium*?

Yes. The organism is highly resistant to the microbicidal effects of chlorine (the concentration of chlorine needed to kill *Crypto sporidium* is over 600 times greater than required for *Giardia* cysts). Also, the small size of the organism may result in it being able to pass through filtration systems in some water treatment plants. Furthermore, infectivity studies suggest that the infective dose among humans for *Crypto sporidium* is very small. Lastly, the Milwaukee outbreak has shown that the organism has the potential to produce an explosive epidemic.

The following selected references are provided as sources of additional information.

1. MacKenzie WR, Hoxie NJ, Proctor MD, et al. A Massive Outbreak in Milwaukee of *Crypto sporidium* Infection Transmitted Through the Public Water Supply. *N Engl J Med* 1994; 331:161-7.
2. Casemore DP. Epidemiologic Aspects of Human Cryptosporidiosis. *Epidemiol Infect* 1990; 104:1-28.
3. Wolfson JS, Richer JM, Waldron WA, Weber DJ, McCarthy Divl. Hopkins CC. Cryptosporidiosis in Immunocompetent Patients. *N Engl J Med* 1985; 312:1278-82.
4. Skeels MR, Sololow R, Hubbard CV, Andrus JK, Baisch J. Cryptosporidium Infection in Oregon Public Health Clinic Patients, 1985-1988: the Value of Statewide Laboratory Surveillance. *Am J Public Health* 1990;80:305-8.
5. Sorvillo FJ, Fujioka K, Nahlen B, et al. ASwimming-associated Cryptosporidiosis. *Am J Public Health* 1992;82:742-4.
6. Current WL, Garcia LS. Cryptosporidiosis. *Clin Microbiol Rev* 1991;4:305-8.

For more information, contact:

-Montana Public Health Laboratory, 444-2642

-Montana State Epidemiologist, 444-0273

-Montana Water Quality Division, 444-2406